FIG.1

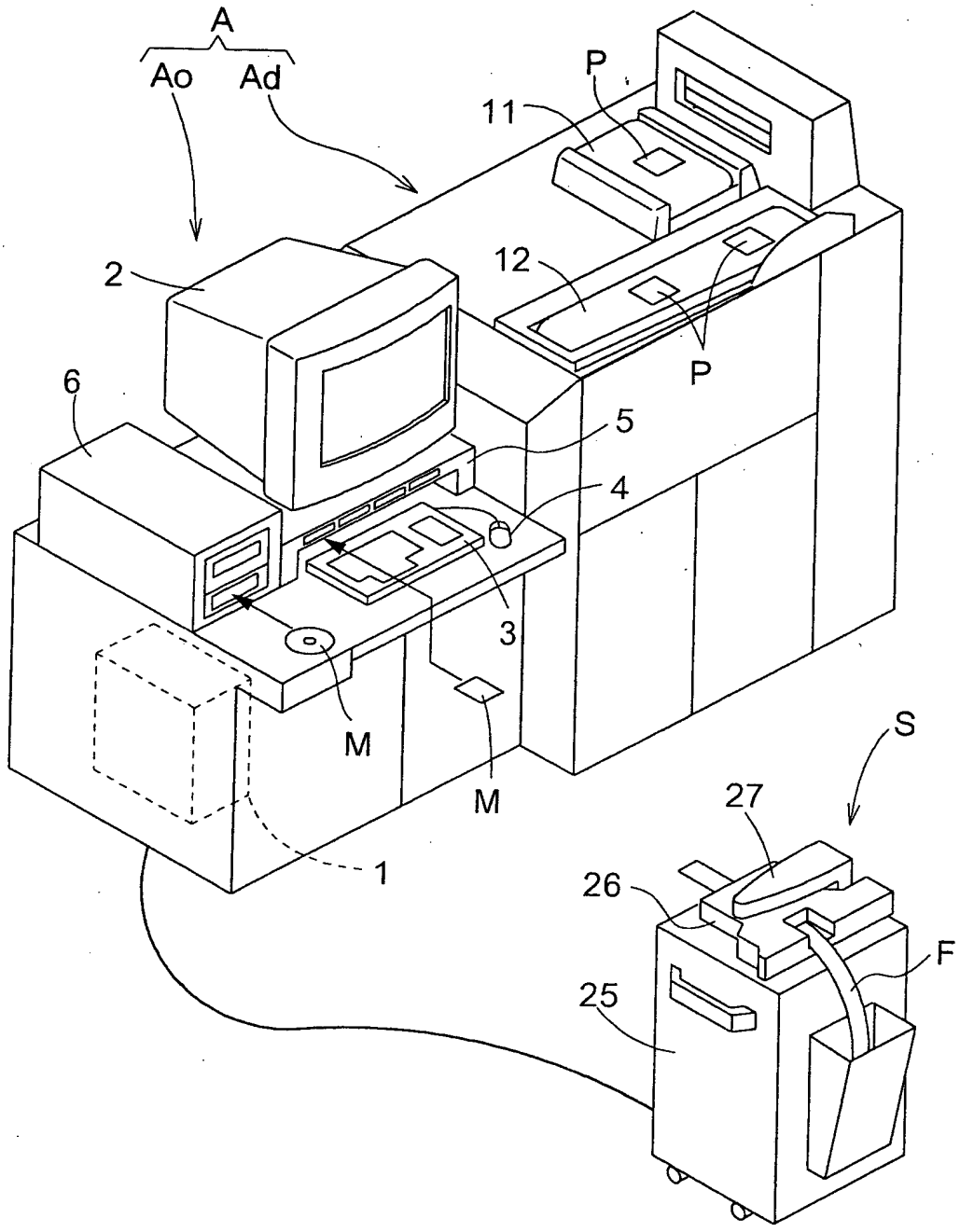


FIG.2

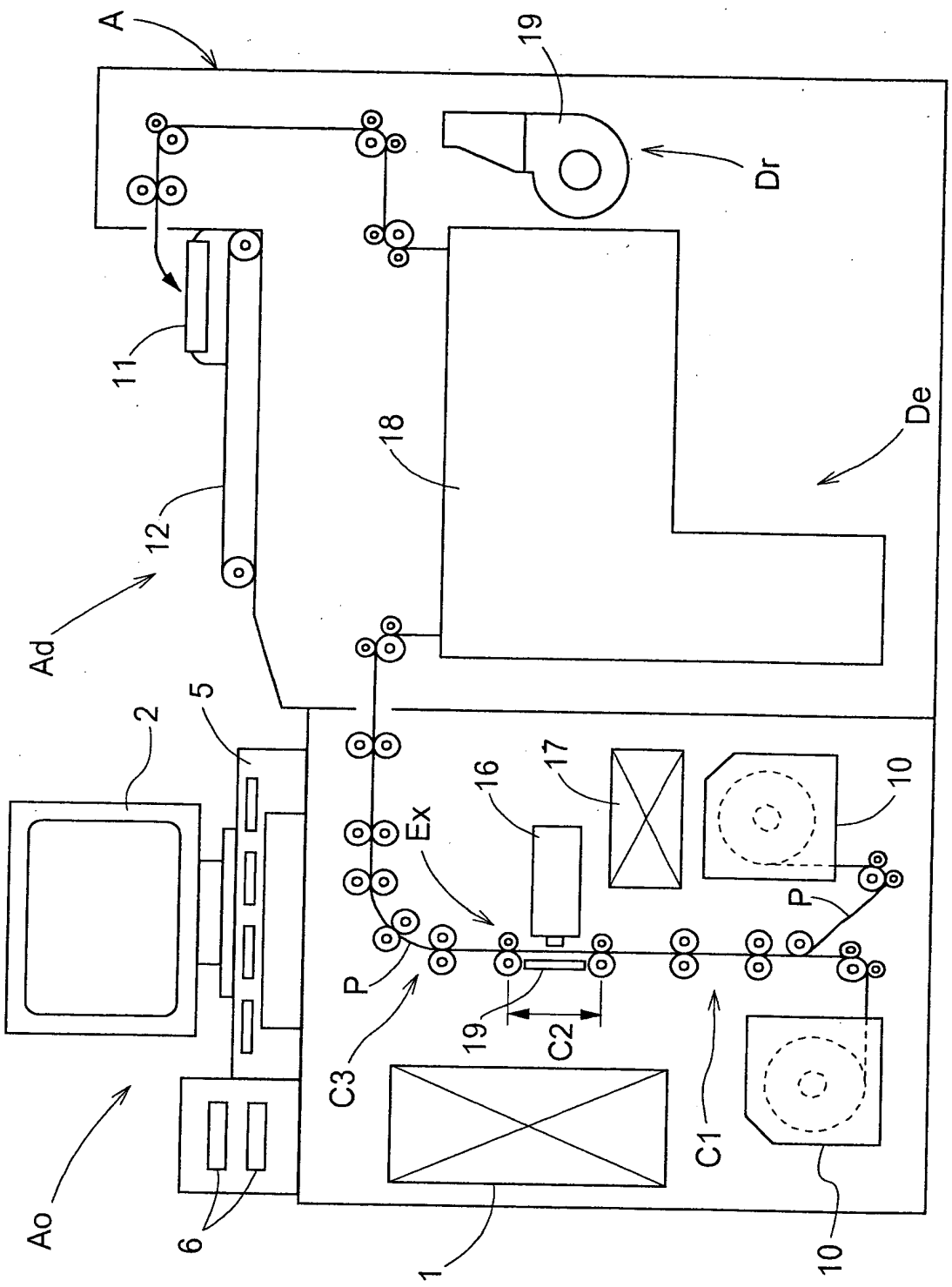


FIG.3

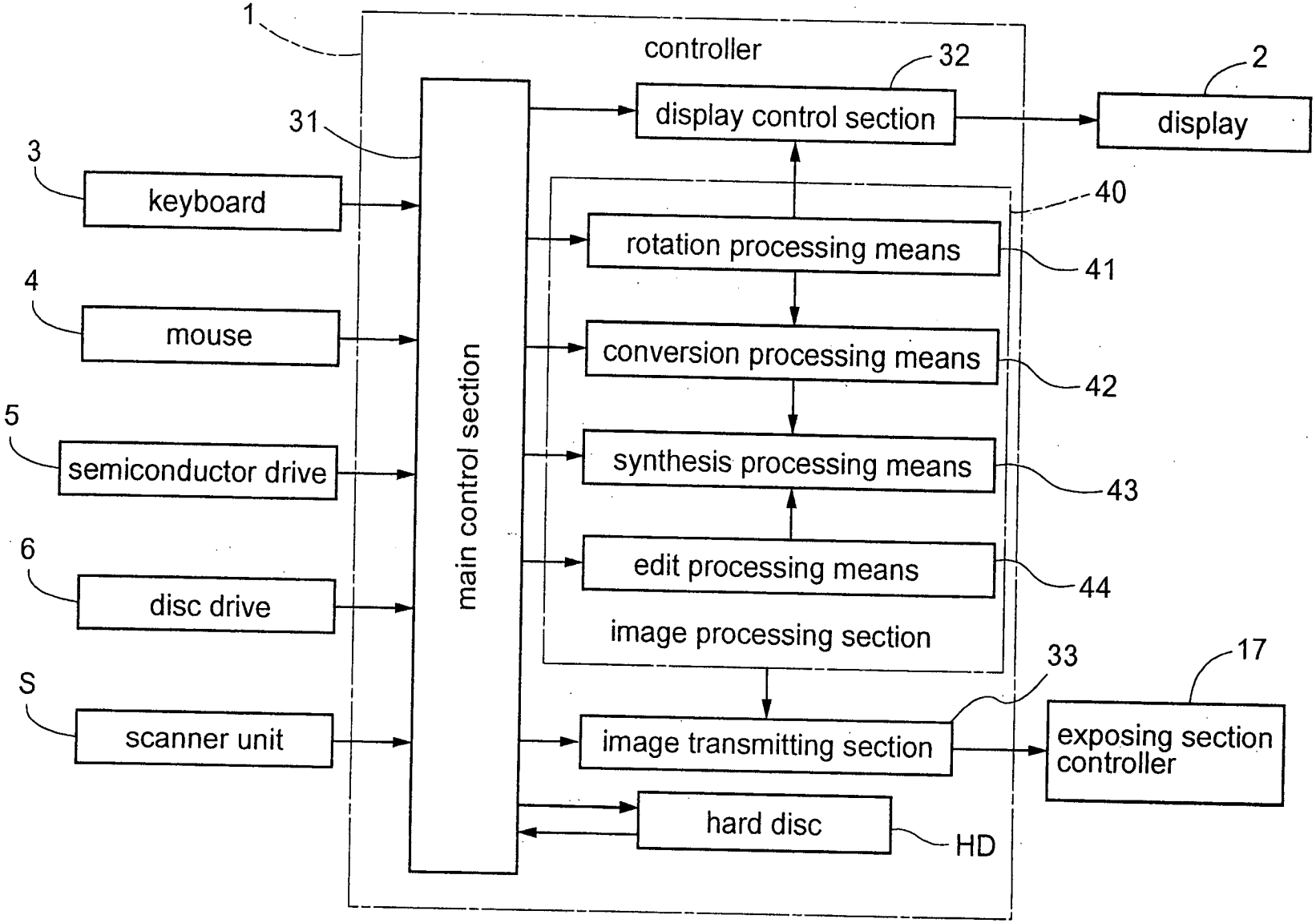

1
controller
32
2
display control section
display
31
3
keyboard
40
rotation processing means
41
4
mouse
conversion processing means
42
5
semiconductor drive
synthesis processing means
43
6
disc drive
edit processing means
44
main control section
image processing section
S
scanner unit
33
17
image transmitting section
exposing section controller
hard disc
HD

FIG.4

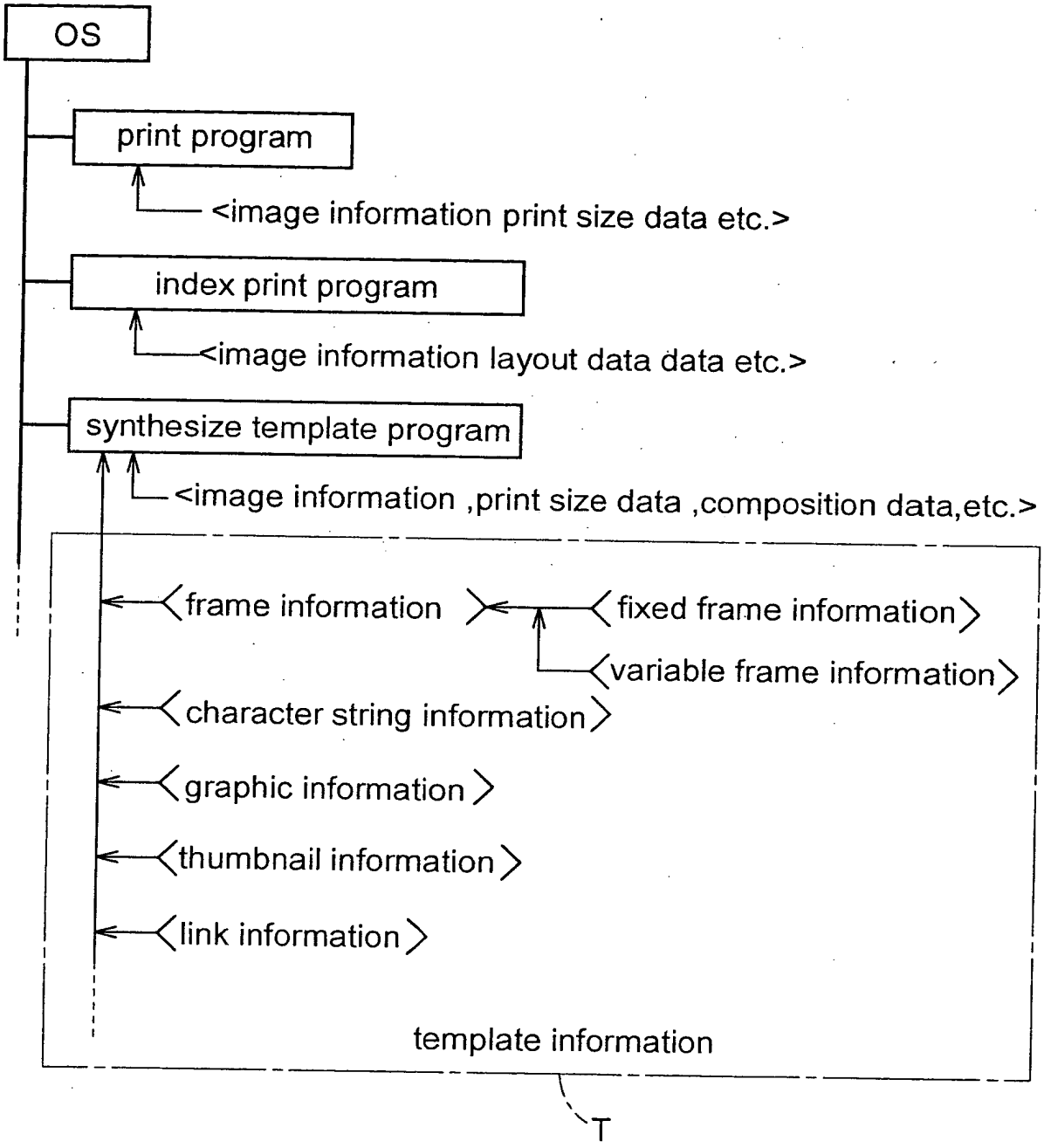

OS
print program
<image information print size data etc.>
index print program
<image information layout data data etc.>
synthesize template program
<image information ,print size data ,composition data,etc.>
frame information
fixed frame information
variable frame information
character string information
graphic information
thumbnail information
link information
template information
T

FIG.5

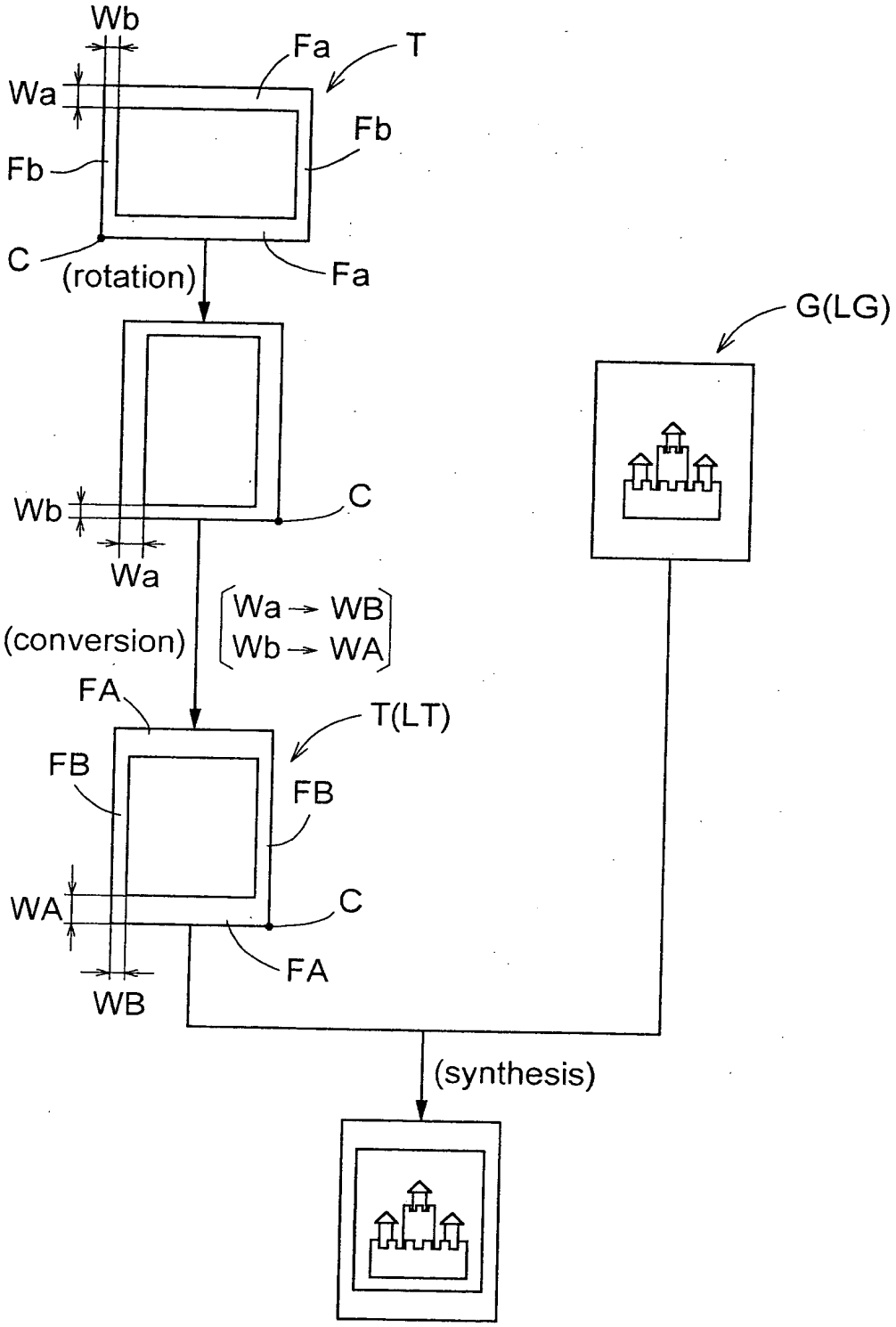

Wb
Fa
T
Wa
Fb
Fb
C
(rotation)
Fa
G(LG)
Wb
C
Wa
(conversion)
Wa → WB
Wb → WA
FA
T(LT)
FB
FB
WA
C
FA
WB
(synthesis)

FIG.6

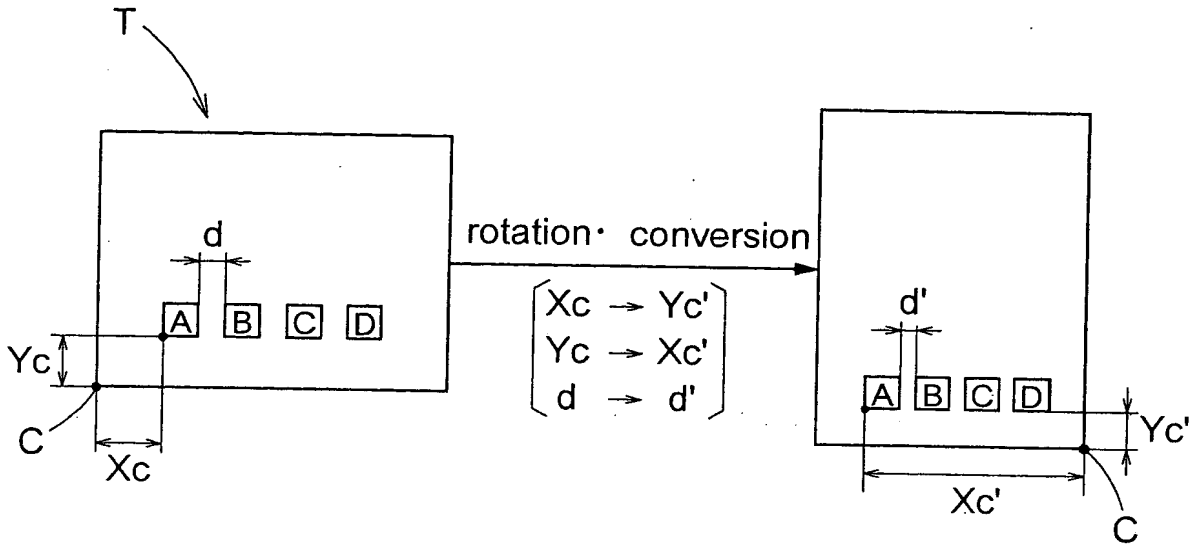

T
d
A
B
C
D
Yc
C
Xc
rotation· conversion
Xc → Yc'
Yc → Xc'
d → d'
d'
A
B
C
D
Yc'
Xc'
C

FIG.7

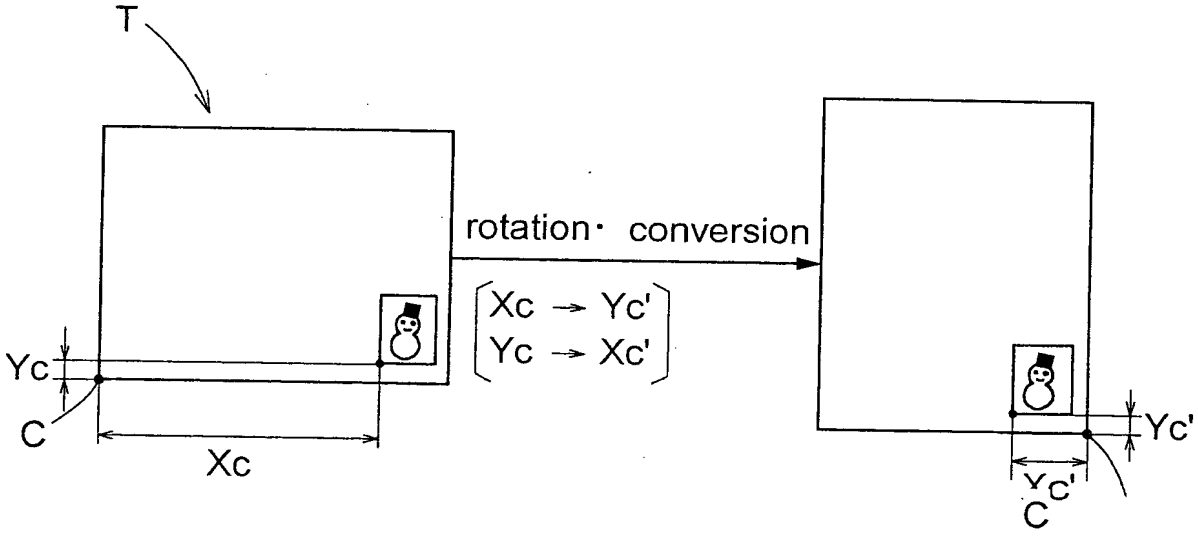

T
Yc
C
Xc
rotation· conversion
Xc → Yc'
Yc → Xc'
Yc'
Yc'
C

FIG.8

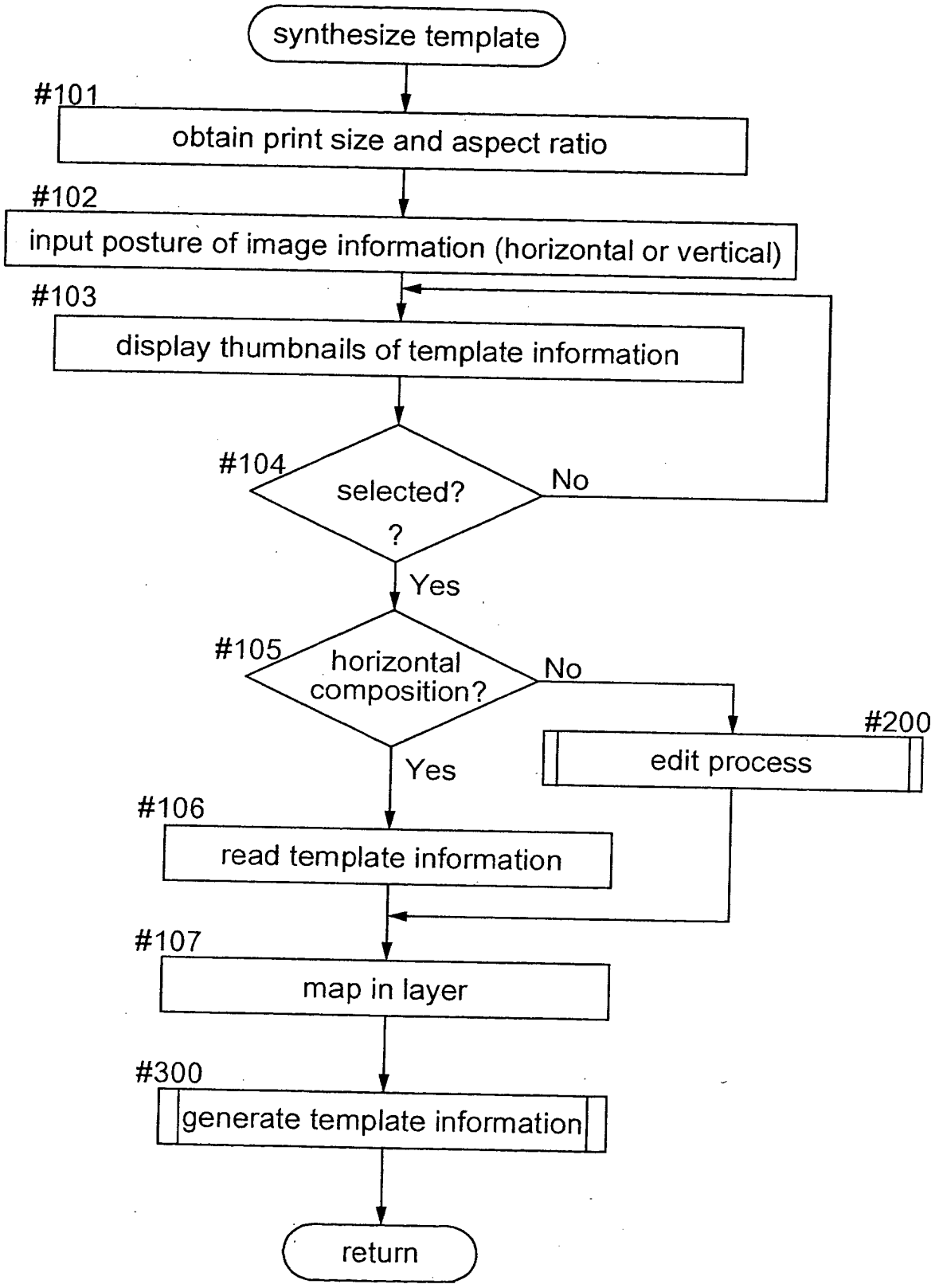

synthesize template
#101
obtain print size and aspect ratio
#102
input posture of image information (horizontal or vertical)
#103
display thumbnails of template information
#104
selected?
?
No
Yes
#105
horizontal composition?
No
#200
edit process
Yes
#106
read template information
#107
map in layer
#300
generate template information
return

FIG.9

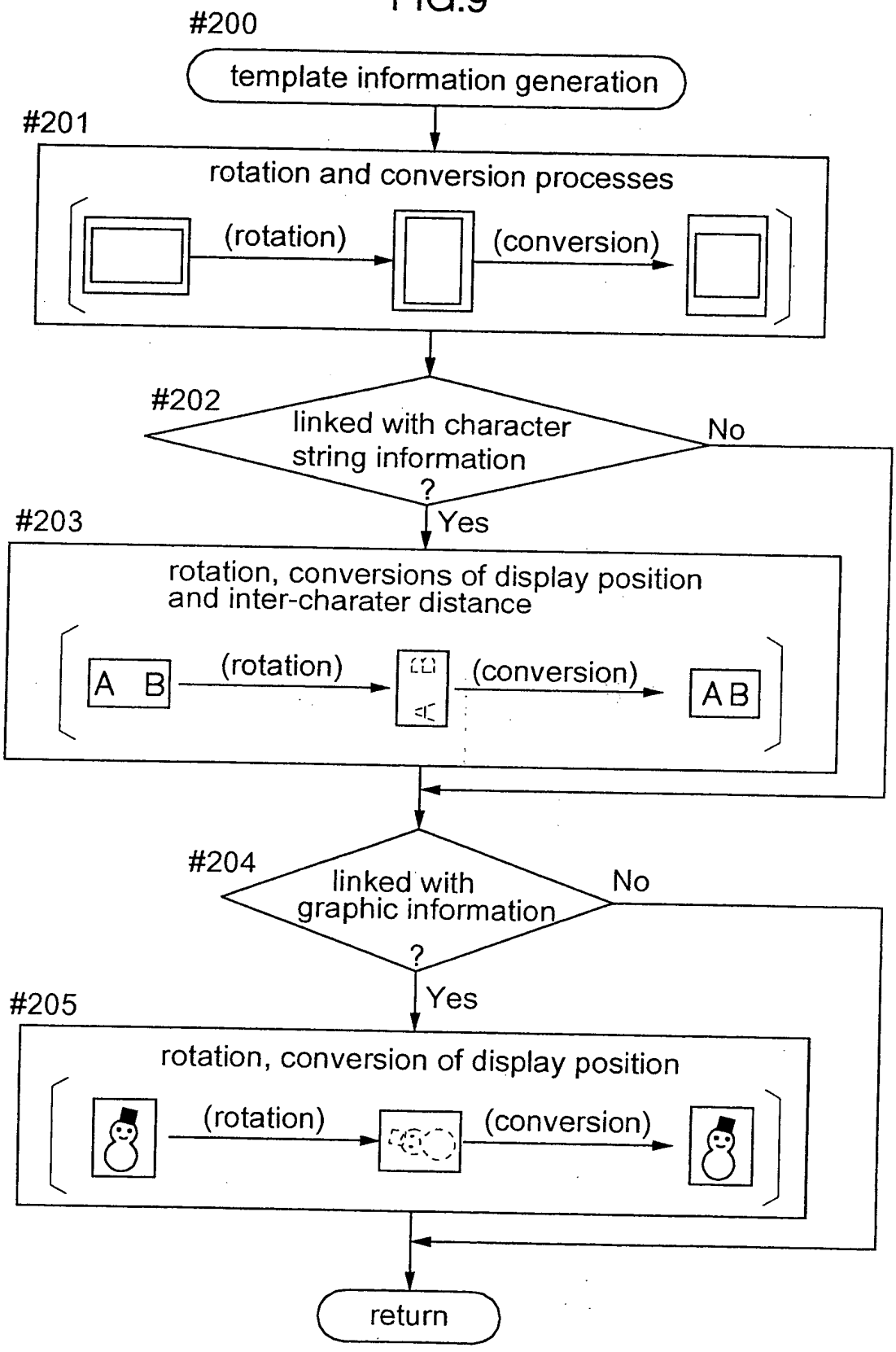

#200
template information generation
#201
rotation and conversion processes
(rotation)
(conversion)
#202
linked with character string information ?
No
Yes
#203
rotation, conversions of display position and inter-charater distance
A B
(rotation)
(conversion)
A B
#204
linked with graphic information ?
No
Yes
#205
rotation, conversion of display position
(rotation)
(conversion)
return

FIG.10

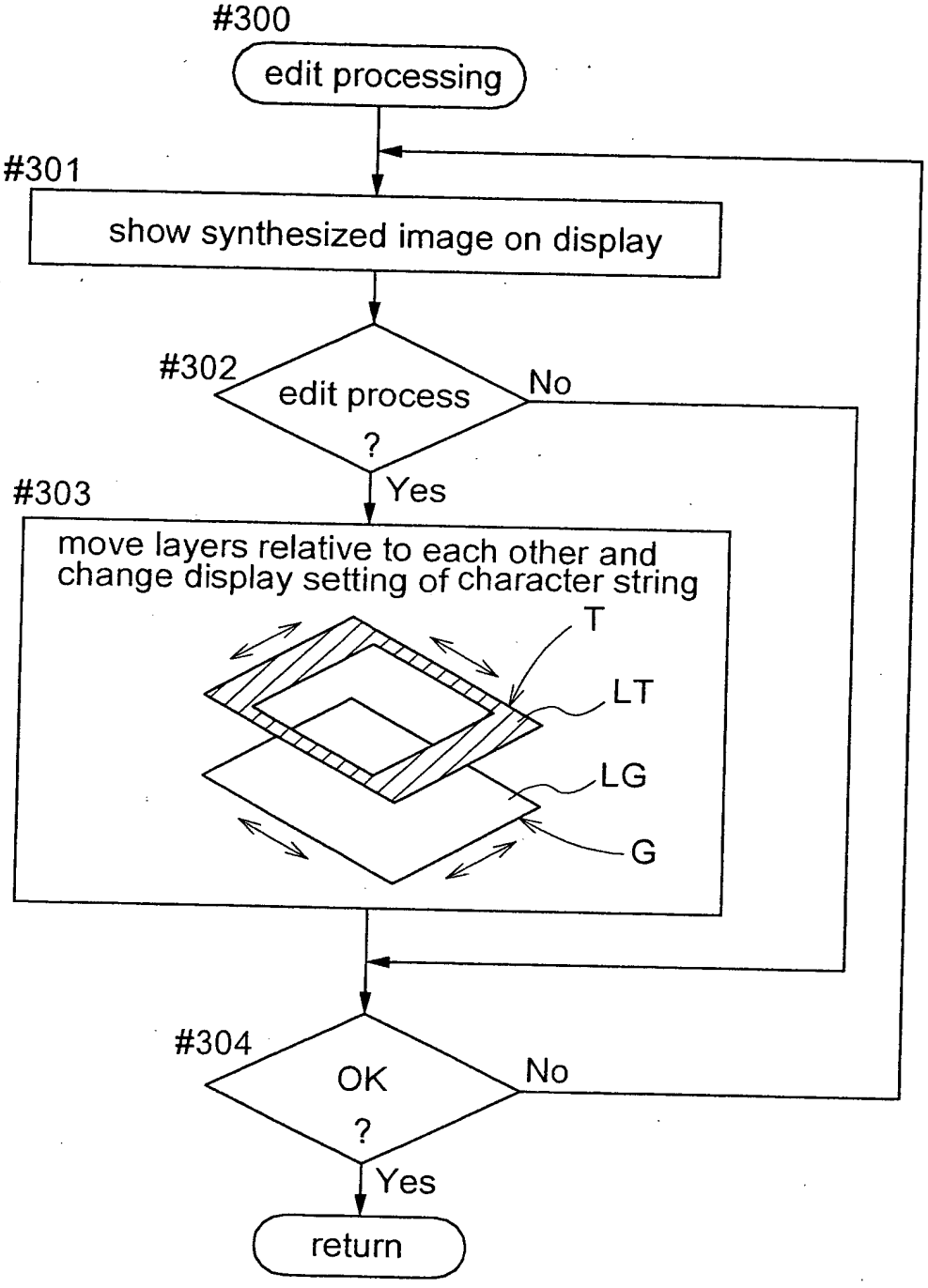

#300
edit processing
#301
show synthesized image on display
#302
edit process
?
No
Yes
#303
move layers relative to each other and change display setting of character string
T
LT
LG
G
#304
OK
?
No
Yes
return

FIG.11

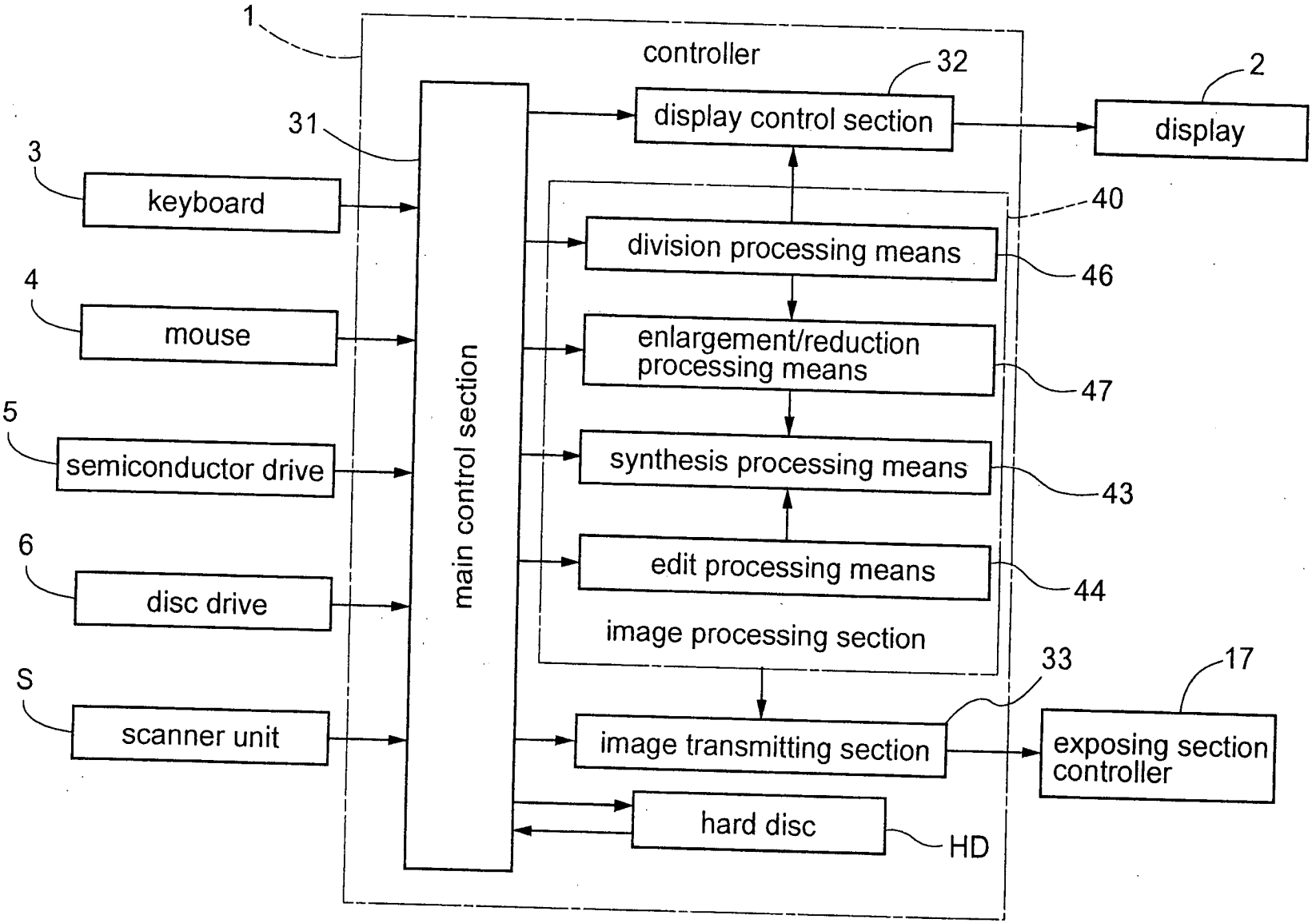

1
controller
32
2
display control section
display
31
3
keyboard
40
division processing means
46
4
mouse
enlargement/reduction processing means
47
5
semiconductor drive
synthesis processing means
43
6
disc drive
edit processing means
44
main control section
image processing section
S
scanner unit
33
17
image transmitting section
exposing section controller
hard disc
HD

FIG.12

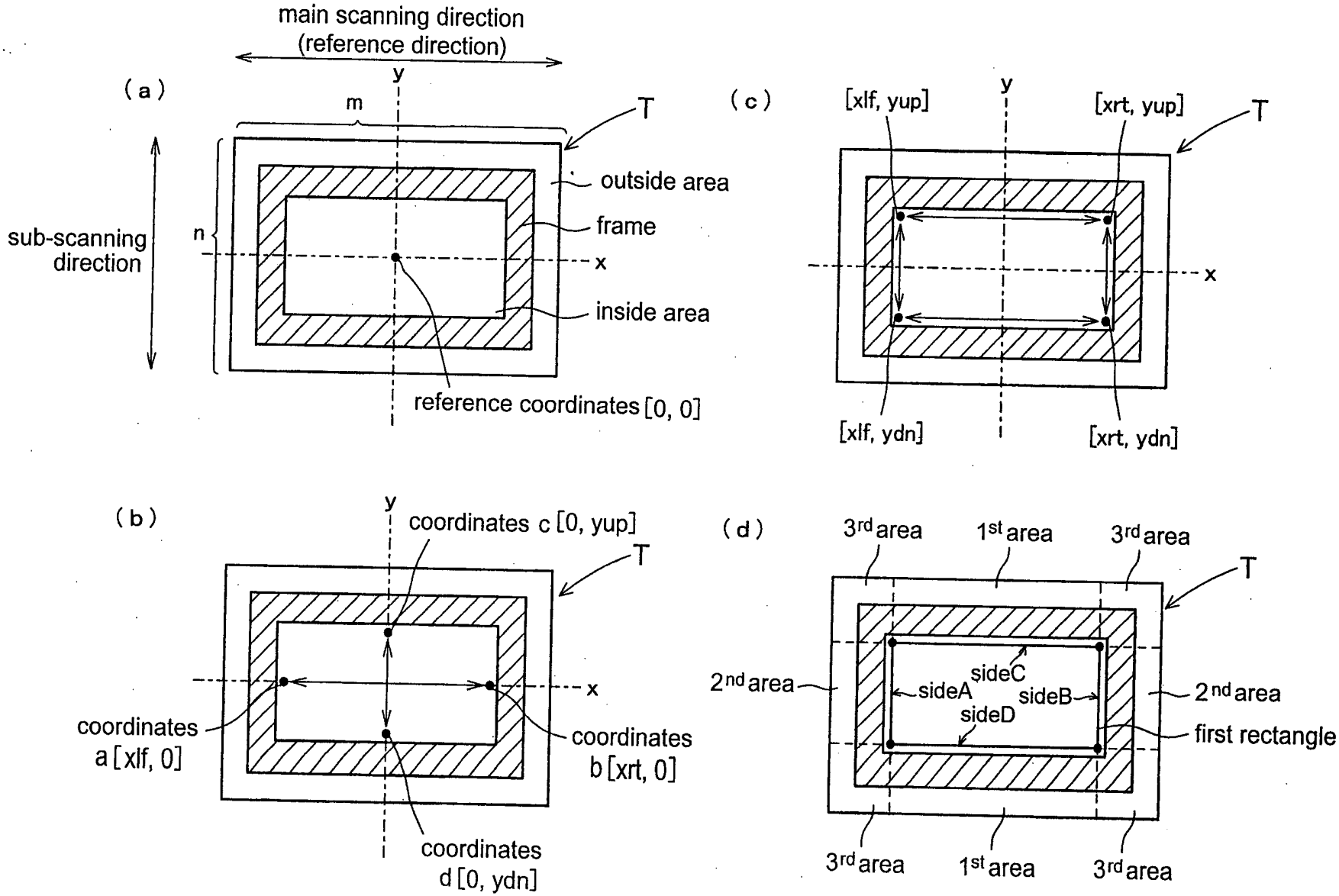

main scanning direction
(reference direction)
y
(a)
m
T
outside area
frame
n
sub-scanning
direction
x
inside area
reference coordinates [0, 0]
(c)
[xlf, yup]
y
[xrt, yup]
T
x
[xlf, ydn]
[xrt, ydn]
(b)
y
coordinates c [0, yup]
T
x
coordinates
a [xlf, 0]
coordinates
b [xrt, 0]
coordinates
d [0, ydn]
(d)
3rd area
1st area
3rd area
T
2nd area
sideC
sideA
sideB
sideD
2nd area
first rectangle
3rd area
1st area
3rd area

FIG.13

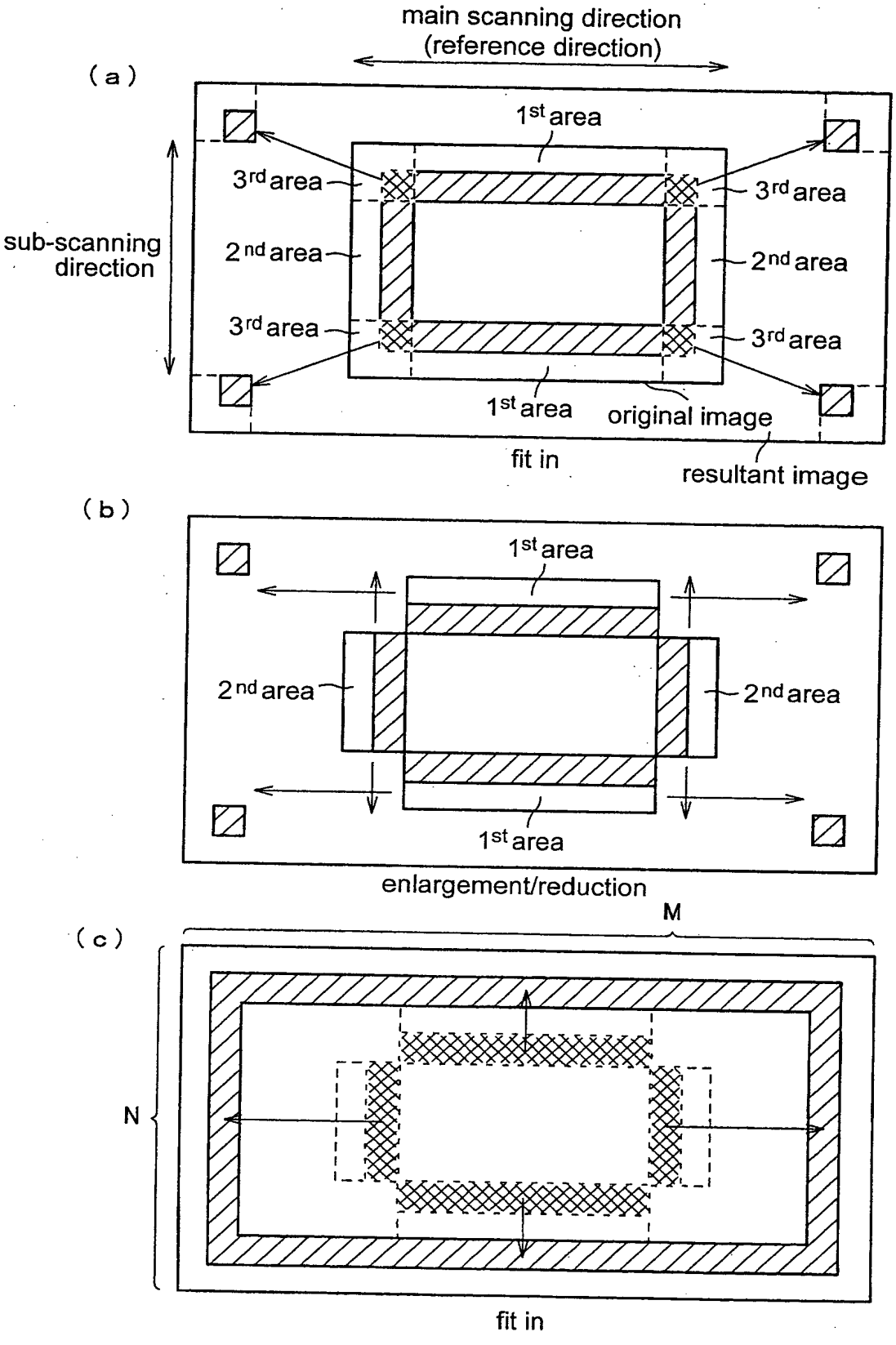

main scanning direction
(reference direction)
(a)
1st area
3rd area
3rd area
sub-scanning direction
2nd area
2nd area
3rd area
3rd area
1st area
original image
fit in
resultant image
(b)
1st area
2nd area
2nd area
1st area
enlargement/reduction
(c)
M
N
fit in

FIG.14

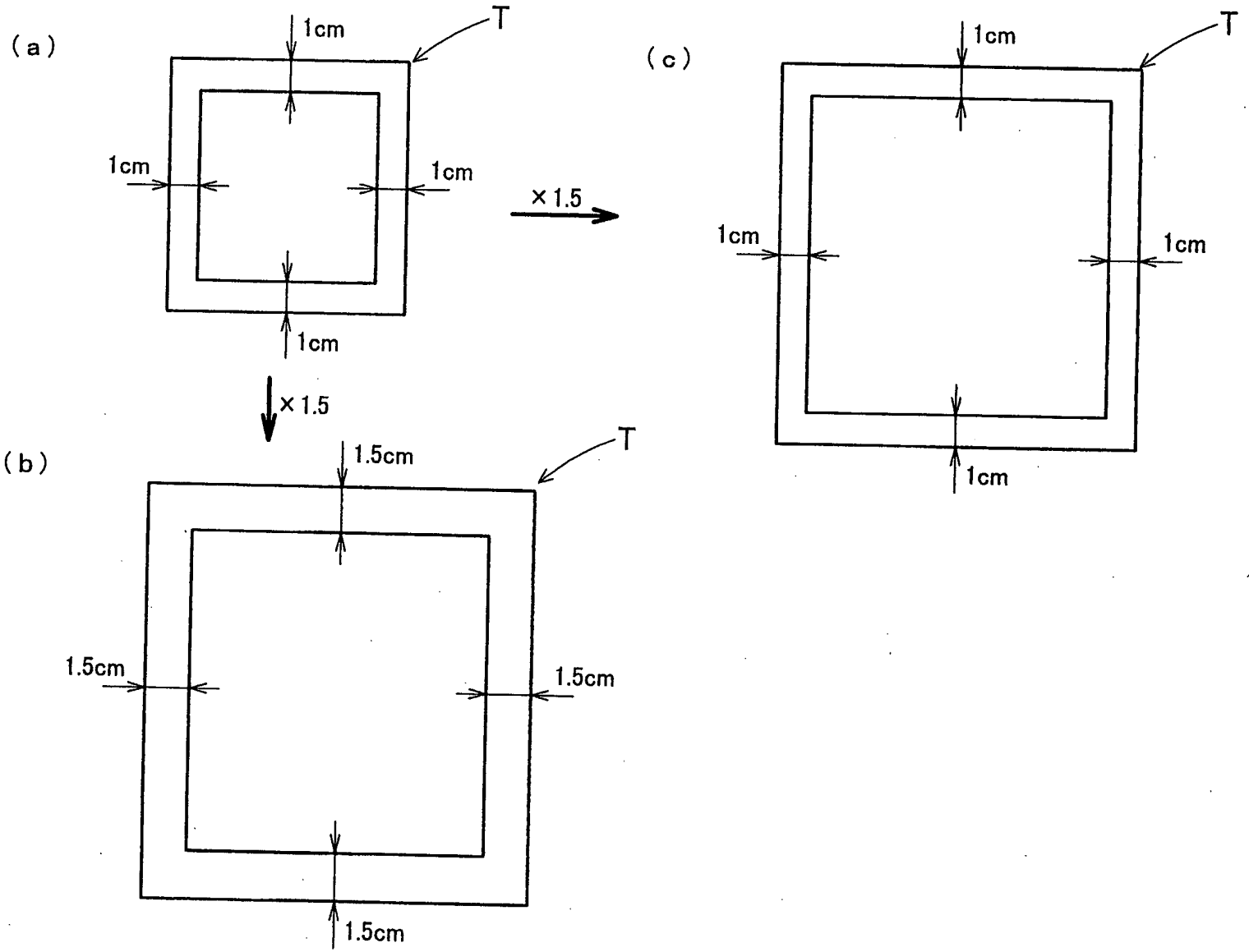

(a)
1cm
T
1cm
1cm
1cm
×1.5
×1.5
(b)
1.5cm
T
1.5cm
1.5cm
1.5cm
(c)
1cm
T
1cm
1cm
1cm

FIG.15

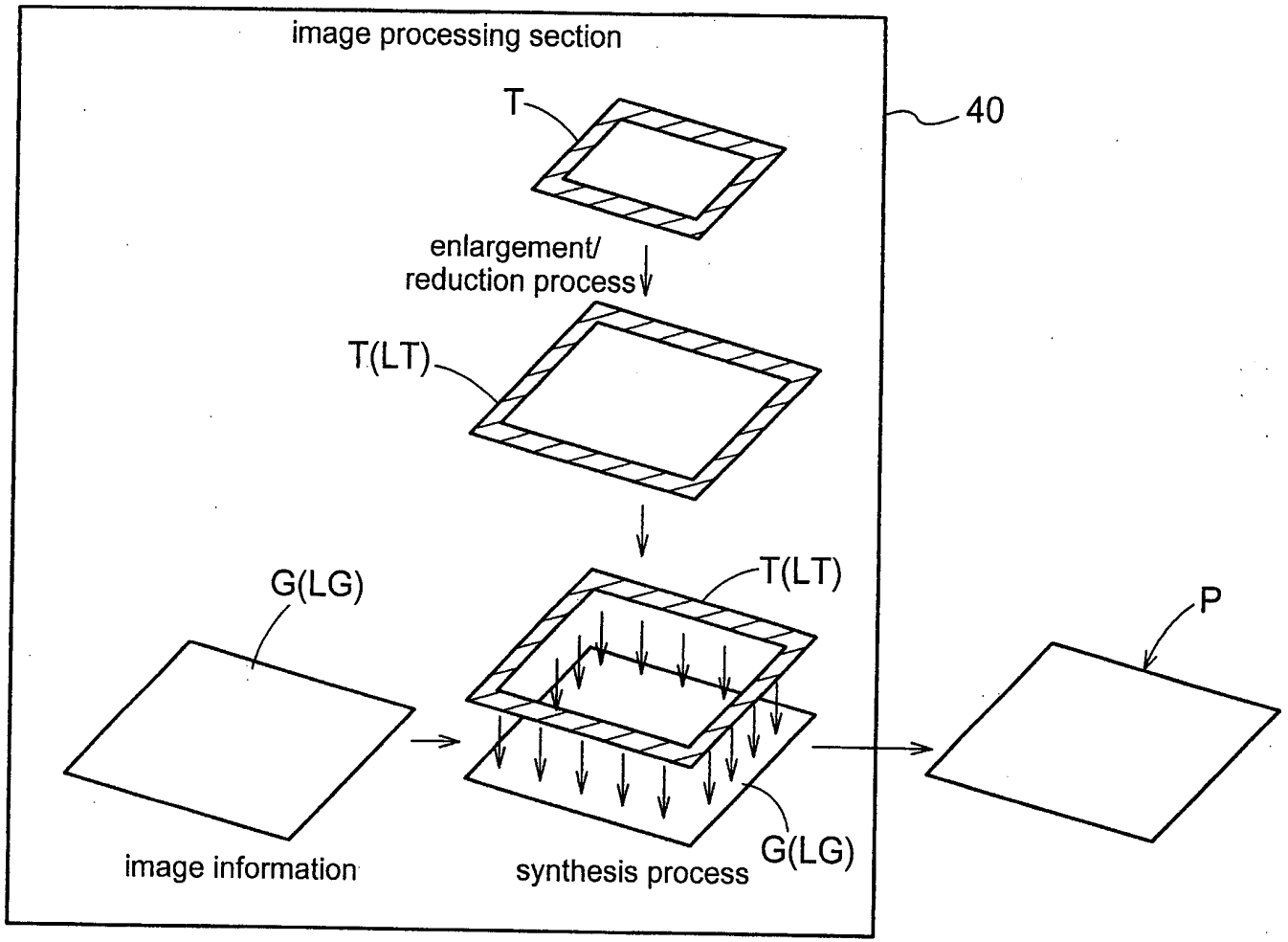


image processing section
40
T
enlargement/
reduction process
T(LT)
G(LG)
T(LT)
P
image information
synthesis process
G(LG)

FIG.16

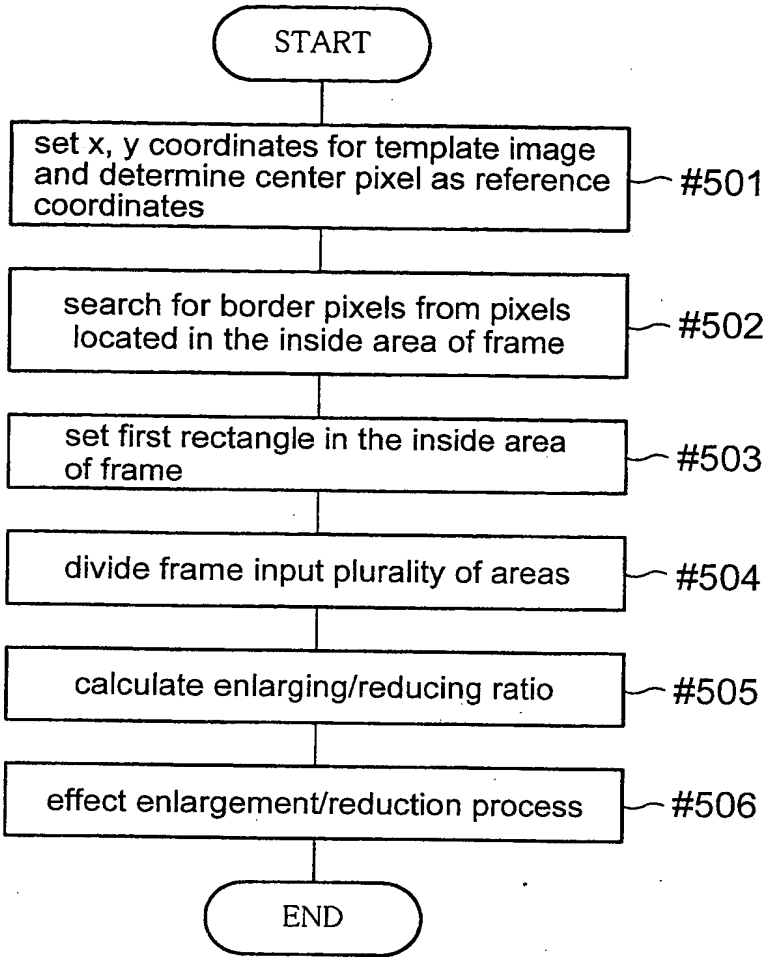

START
set x, y coordinates for template image and determine center pixel as reference coordinates
#501
search for border pixels from pixels located in the inside area of frame
#502
set first rectangle in the inside area of frame
#503
divide frame input plurality of areas
#504
calculate enlarging/reducing ratio
#505
effect enlargement/reduction process
#506
END

FIG.17

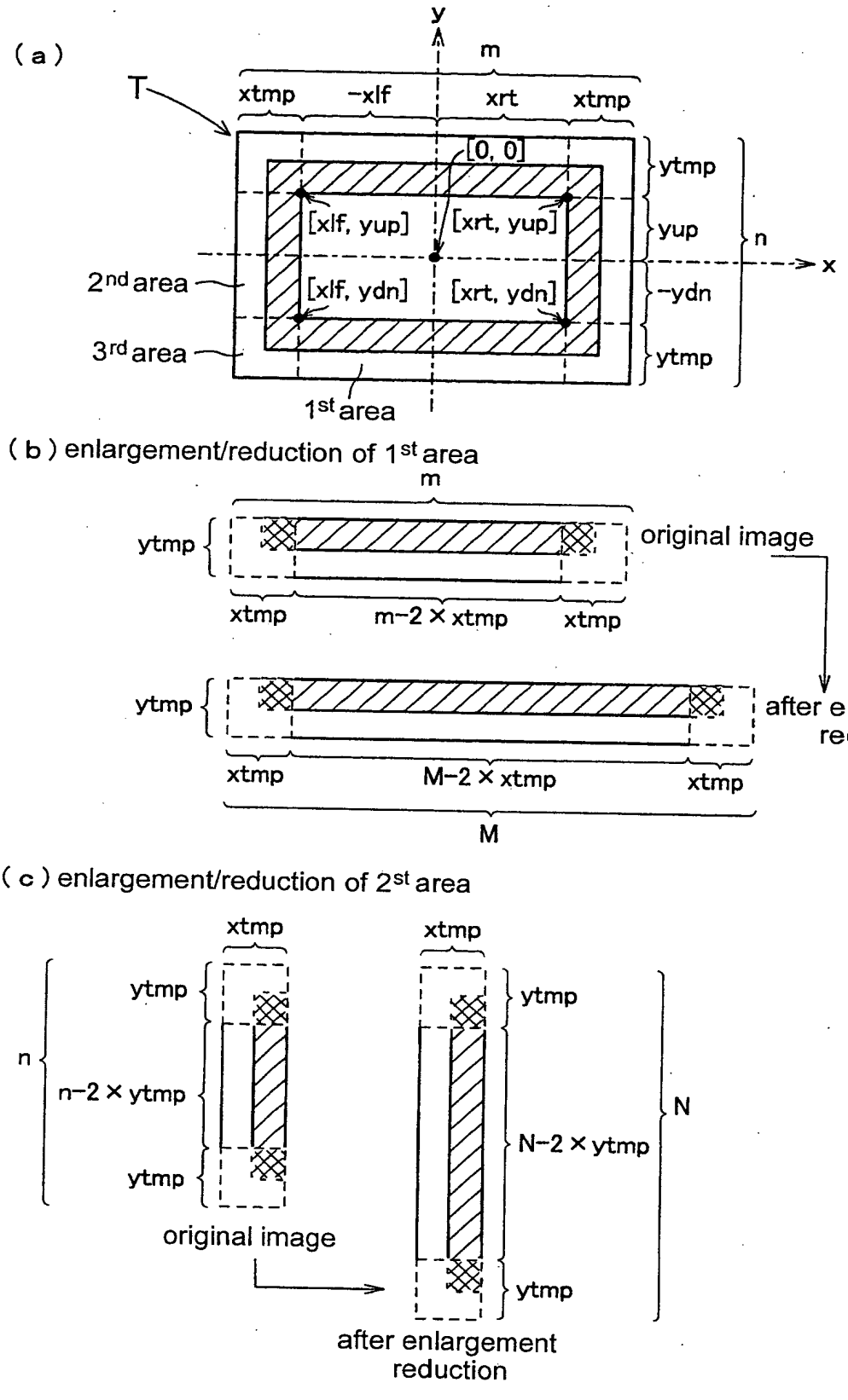
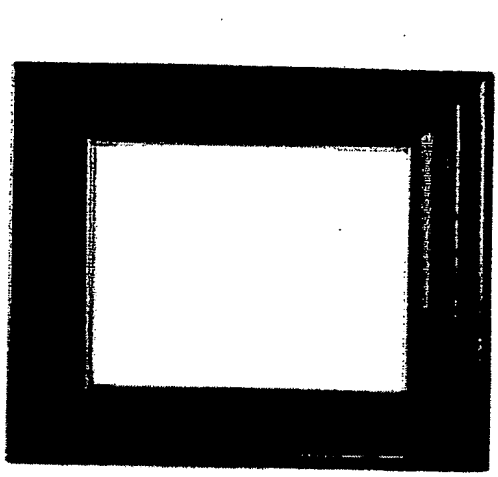
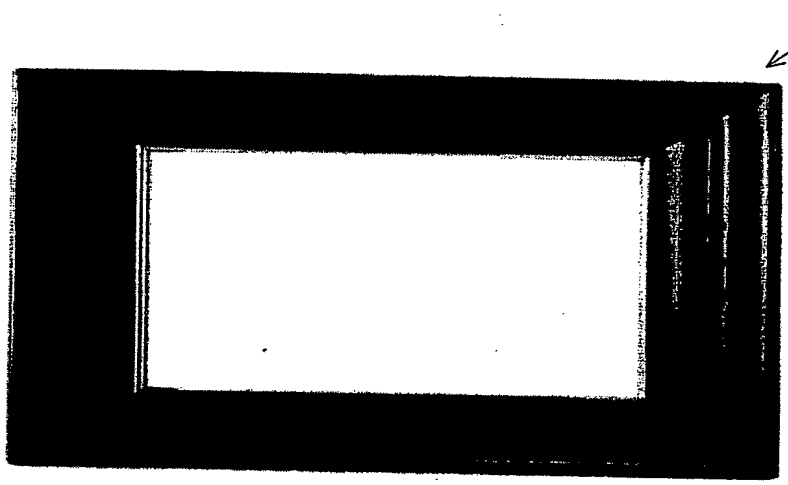

(a)
y
m
T
xtmp
−xlf
xrt
xtmp
[0, 0]
ytmp
[xlf, yup]
[xrt, yup]
yup
n
x
2nd area
[xlf, ydn]
[xrt, ydn]
−ydn
3rd area
ytmp
1st area
(b) enlargement/reduction of 1st area
m
ytmp
original image
xtmp
m−2 × xtmp
xtmp
ytmp
after enlargement/
reduction
xtmp
M−2 × xtmp
xtmp
M
(c) enlargement/reduction of 2st area
xtmp
xtmp
ytmp
ytmp
n
n−2 × ytmp
ytmp
N
N−2 × ytmp
original image
ytmp
after enlargement
reduction

FIG.18

(a)



(b)



(c)

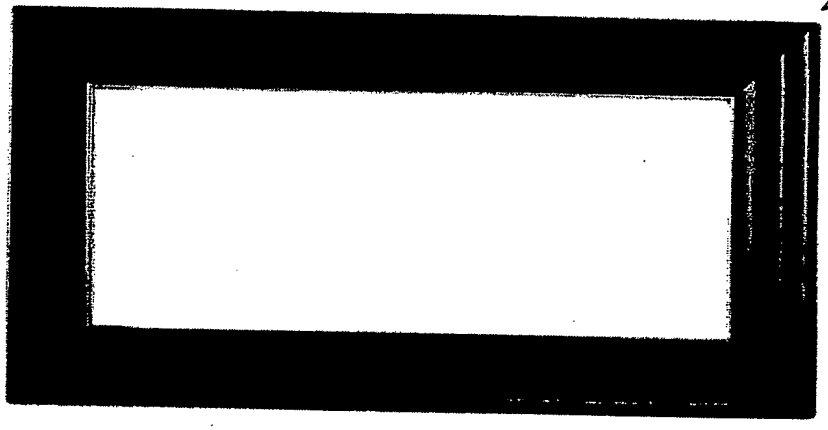


FIG.19

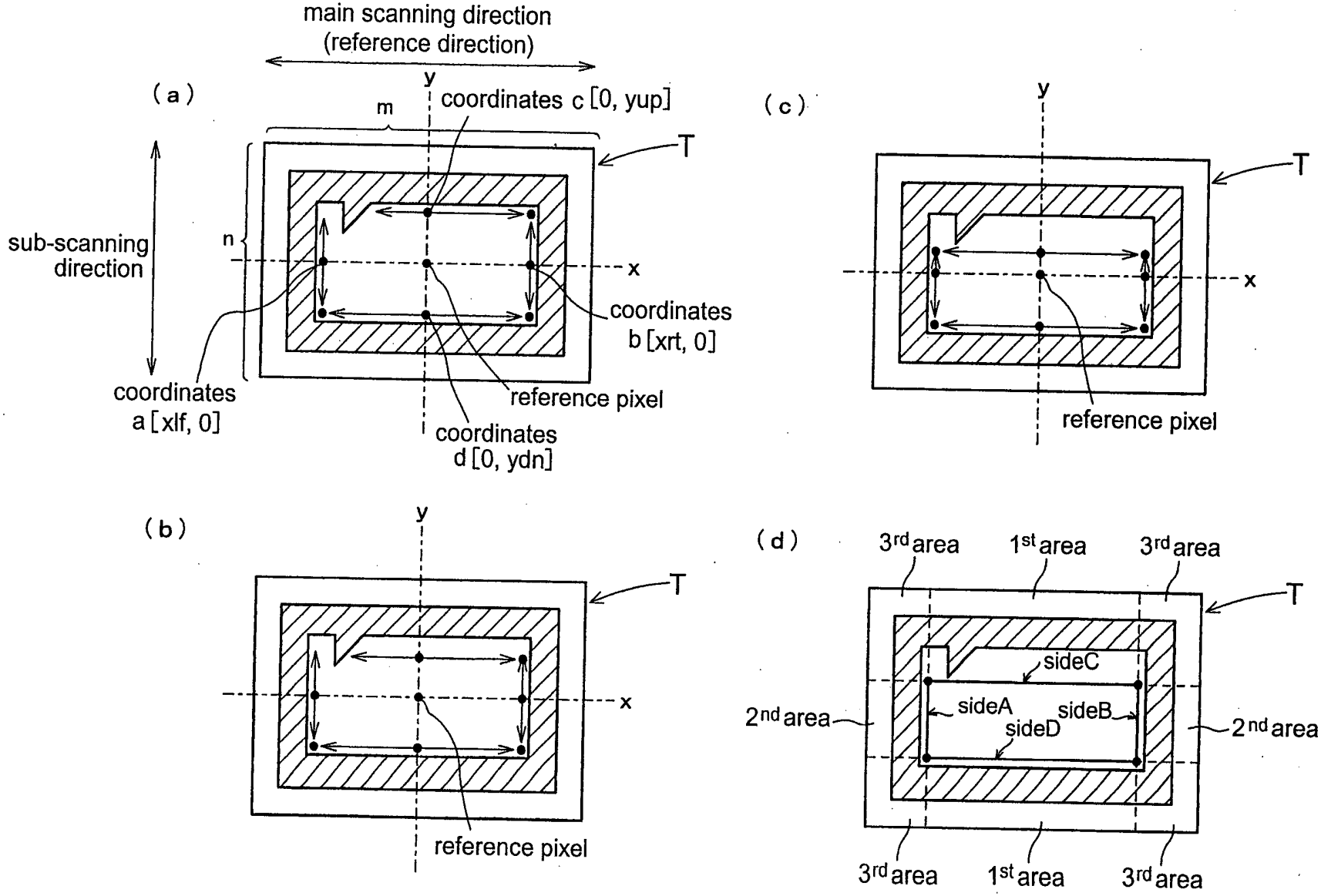

main scanning direction
(reference direction)
(a)
y
m
coordinates c [0, yup]
T
sub-scanning
direction
n
x
coordinates
b [xrt, 0]
coordinates
a [xlf, 0]
reference pixel
coordinates
d [0, ydn]
(b)
y
T
x
reference pixel
(c)
y
T
x
reference pixel
(d)
3rd area
1st area
3rd area
T
sideC
2nd area
sideA
sideB
sideD
2nd area
3rd area
1st area
3rd area

FIG.20

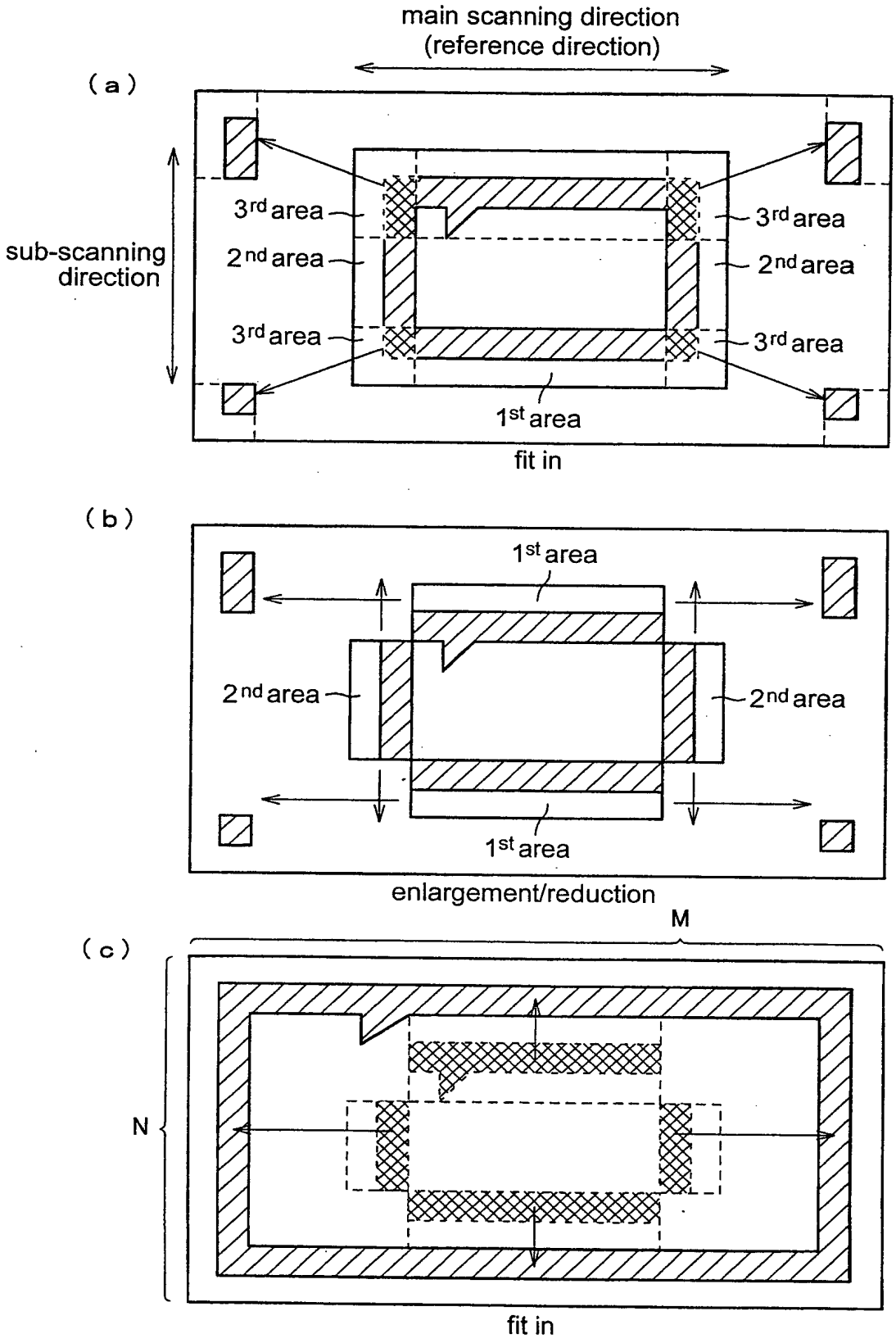

main scanning direction
(reference direction)
(a)
sub-scanning direction
3rd area
2nd area
3rd area
3rd area
2nd area
3rd area
1st area
fit in
(b)
1st area
2nd area
2nd area
1st area
enlargement/reduction
M
(c)
N
fit in

FIG.21

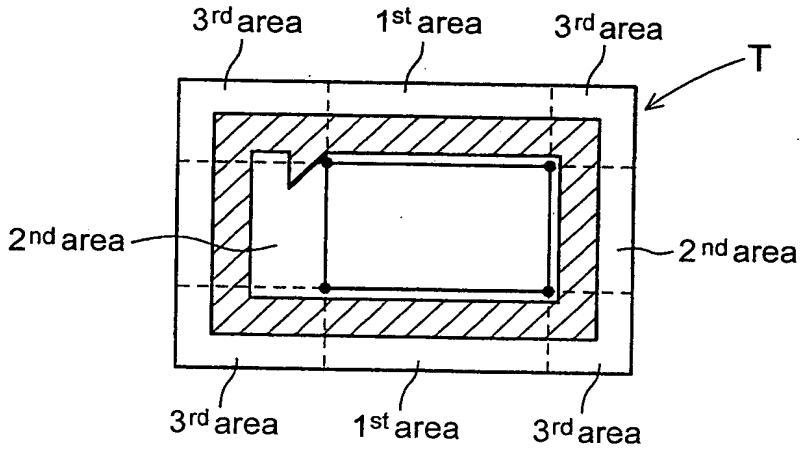

3rd area
1st area
3rd area
T
2nd area
2nd area
3rd area
1st area
3rd area

FIG.22

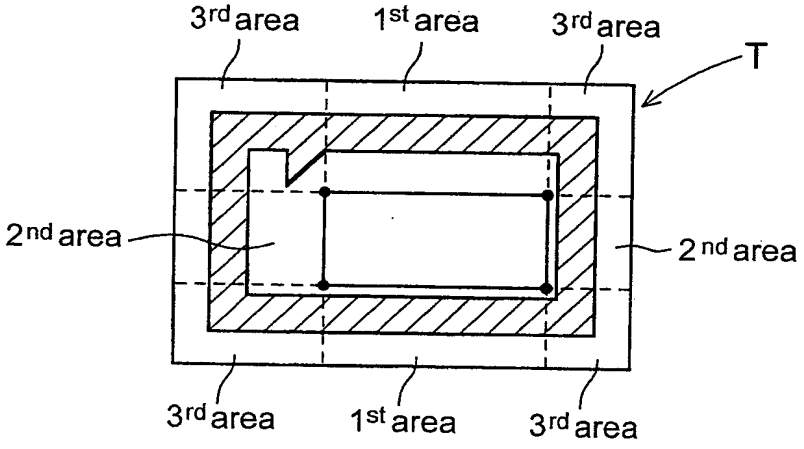
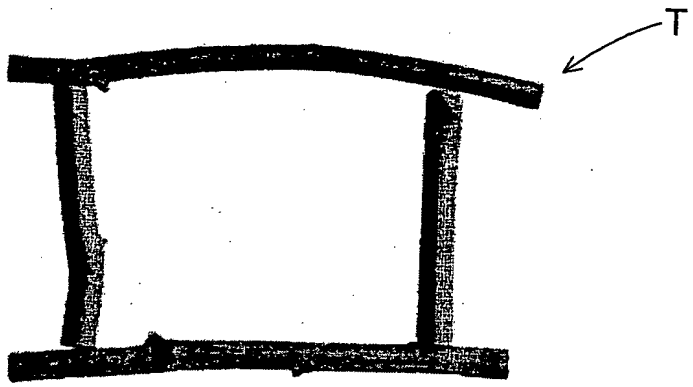
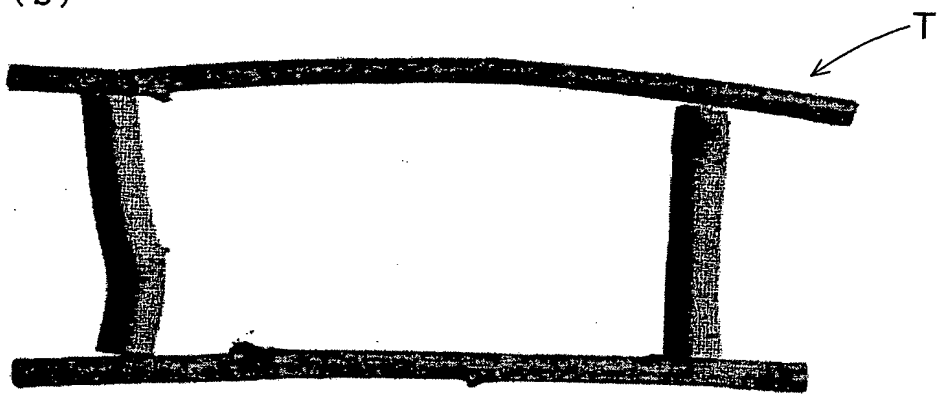

3rd area
1st area
3rd area
T
2nd area
2nd area
3rd area
1st area
3rd area

FIG.23

(a)



(b)



(c)

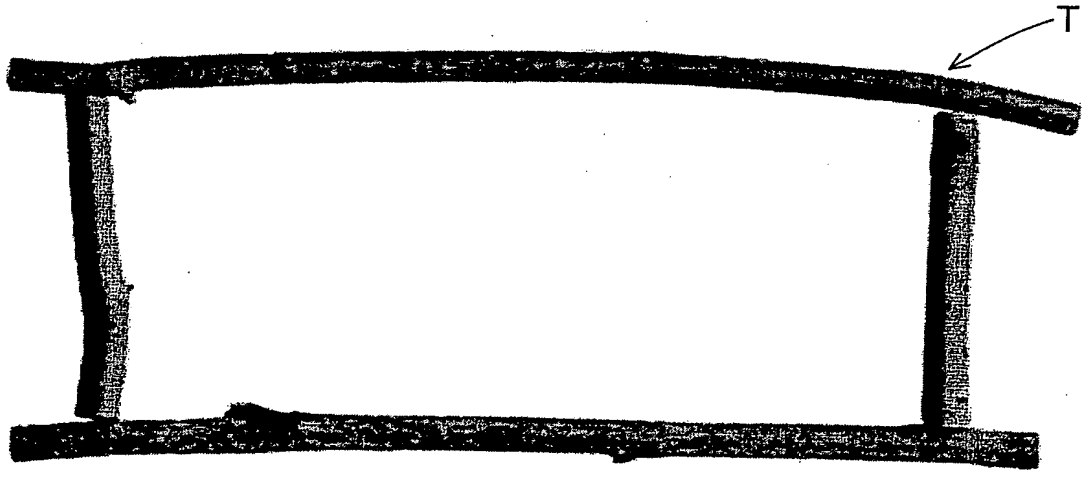


FIG.24

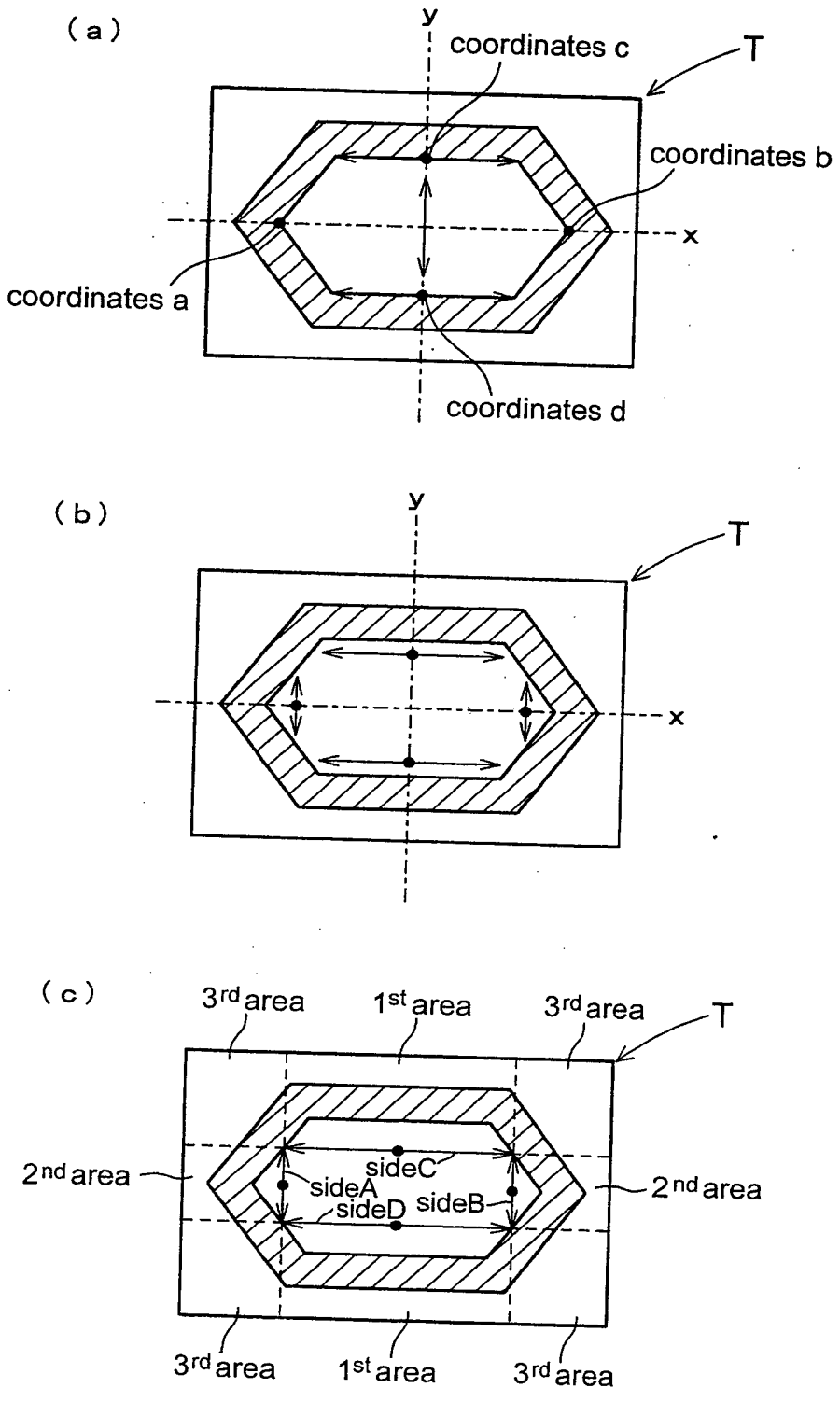
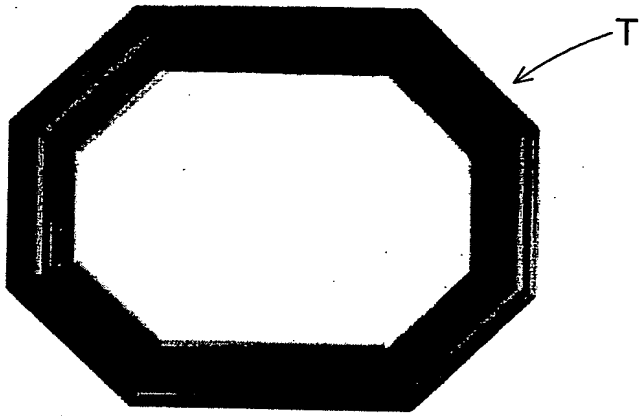
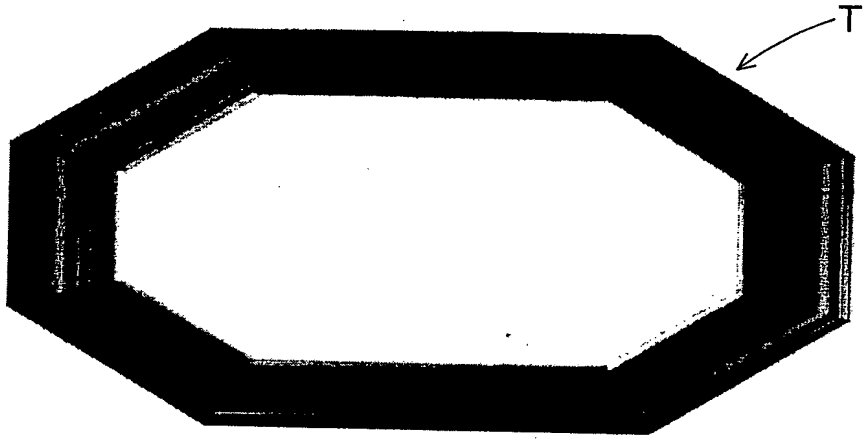

(a)
y
coordinates c
T
coordinates b
x
coordinates a
coordinates d
(b)
y
T
x
(c)
3rd area
1st area
3rd area
T
2nd area
sideC
sideA
sideD
sideB
2nd area
3rd area
1st area
3rd area

FIG.25

(a)



(b)



(c)

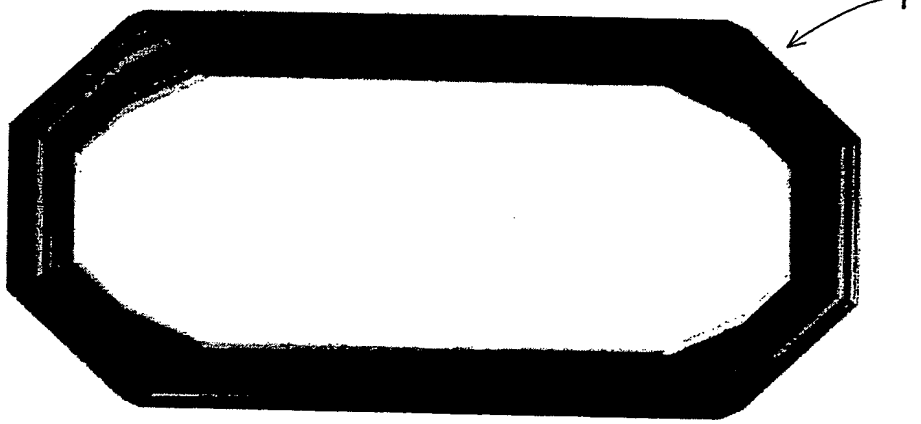


FIG.26

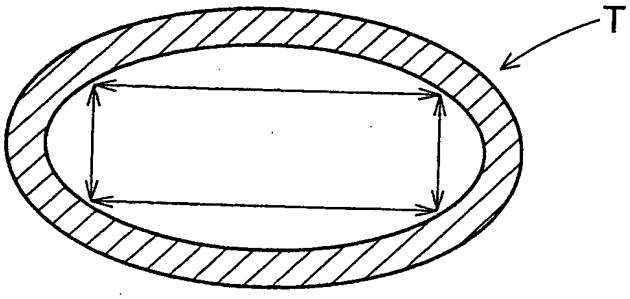


FIG.27

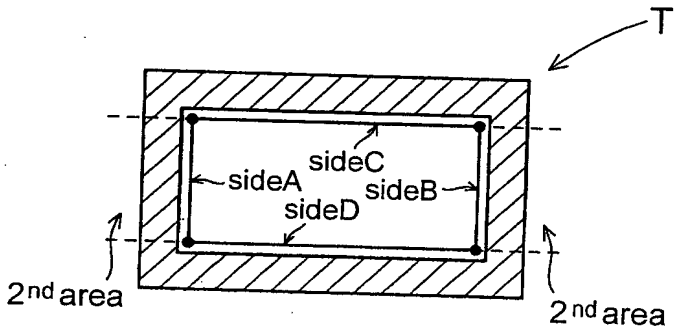
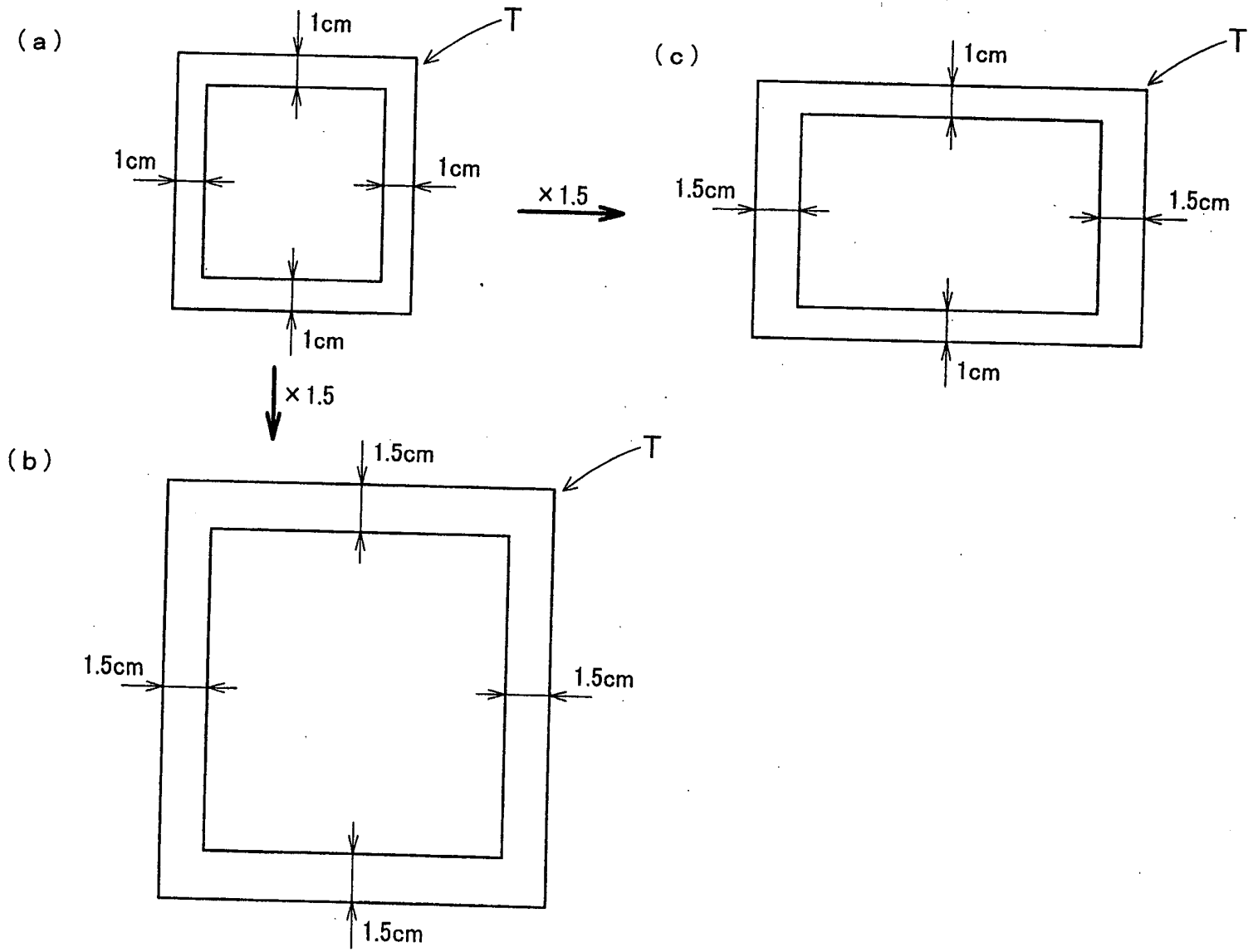


FIG.28


(a)
1cm
T
1cm
1cm
1cm
×1.5
(c)
1cm
T
1.5cm
1.5cm
1cm
×1.5
(b)
1.5cm
T
1.5cm
1.5cm
1.5cm